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AMSAT NEWS SERVICE
ANS-327

The AMSAT News Service bulletins are a free, weekly news and information service of AMSAT, The Radio Amateur Satellite Corporation. ANS publishes news related to Amateur Radio in Space including reports on the activities of a worldwide group of Amateur Radio operators who share an active interest in designing, building, launching and communicating through analog and digital Amateur Radio satellites.

The news feed on http://www.amsat.org publishes news of Amateur Radio in Space as soon as our volunteers can post it.

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In this edition:

* SpaceX Dragon Capsule Ferries Four Radio Amateurs to the ISS
* September/October Issue Of The AMSAT Journal Is Now Available
* New Launch Date for EASAT-2 and Hades Satellites
* Arecibo Observatory Faces Demolition After Cable Failures
* DX Portable Operation Planned From Thailand Grid NK99
* Human Error Blamed For Vega Launch Failure
* Changes to AMSAT-NA TLE Distribution for November 19
* Moscow Aviation Institute Plans SSTV Event from ISS
* ARISS News
* Upcoming Satellite Operations
* Hamfests, Conventions, Maker Faires, and Other Events
* Satellite Shorts From All Over

SB SAT @ AMSAT $ANS-327.01
ANS-327 AMSAT News Service Weekly Bulletins

AMSAT News Service Bulletin 327.01
>From AMSAT HQ KENSINGTON, MD.
DATE 2020 November 22
To All RADIO AMATEURS
BID: $ANS-327.01

SpaceX Dragon Capsule Ferries Four Radio Amateurs to the ISS

A SpaceX Dragon capsule carrying four radio amateurs autonomously docked on November 17 at 0401 UTC with the International Space Station (ISS). A SpaceX Falcon 9 launcher carrying the precious payload went into space on Sunday, November 15, from NASA's Kennedy Space Center. They comprise the ISS Expedition 64/65 crew.

"Well, the ISS is loaded with hams now," Amateur Radio on the International Space Station (ARISS) US Delegate for ARRL Rosalie White, K1STO, said on Tuesday. "These four arrived very early this morning Eastern Time: NASA astronauts Victor Glover, KI5BKC; Mike Hopkins,

KF5LJG, and Shannon Walker, KD5DXB, as well as Japan Aerospace Exploration Agency (JAXA) astronaut Soichi Noguchi, KD5TVP." This marks Glover's first time in space. The others all are ISS veterans.

Earlier this year, NASA ISS Ham Project Coordinator Kenneth Ransom, N5VHO, held amateur radio licensing study sessions for Glover, who passed the Technician-class exam on August 20.

The four will remain on station until next spring. They joined Expedition 64 Commander Sergey Ryzhikov and Flight Engineer Sergey Kud-Sverchkov of the Russian space agency Roscosmos, on the ISS.

White said all but Noguchi likely will take part in ARISS contacts with schools. White said the first school contact is tentatively scheduled for December 4 with Tecumseh High School in Oklahoma, home of the Tecumseh High School Amateur Radio Club, K5THS. She said the students have earned their ham licenses, and the club has built an antenna and is learning about satellites and circuits. Members of the South Canadian Amateur Radio Society of Norman, Oklahoma, are providing support and mentoring assistance.

The Sunday launch from Kennedy Space Center marked only the second crewed-flight for the SpaceX Crew Dragon, which became the first commercial vehicle to put humans into orbit when astronauts Doug Hurley and Bob Behnken, KE5GGX, launched in May, and NASA gave SpaceX the go for future such launches.

"The return of human spaceflight to the United States with one of the safest, most advanced systems ever built is a turning point for America's future space exploration," SpaceX claimed, "and it lays the groundwork for missions to the moon, Mars, and beyond."

(ANS thanks ARRL for the above information)

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- In Search of the Ultimate DX - Scott Tilley, VE7TIL

[ANS thanks Paul Stoetzer, N8HM, AMSAT Executive VP, for the above information]

New Launch Date for EASAT-2 and Hades Satellites

AMSAT-EA President Felix Paez, EA4GQS, has announced the scheduled launch date for AMSAT-EA satellites EASAT-2 and HADES. Flying with SpaceX, the two nanosats are scheduled for launch on January 14, 2021. They have been already delivered and integrated on the Alba Orbital deployer.

The satellites have been configured to act as FM voice and FSK data repeaters and not as linear transponders as was the initial plan. In any case, they are believed to be the smallest satellites ever given such a function, as their size is only 7.5 x 5 x 5 cm.

Hades also flies a SSTV camera that will take and send pictures each 15 minutes. The camera module design is based on the one used in the PSAT2 satellite, adapted for AMSAT-EA by the Brno University of Technology.

Hades – FM voice repeater, callsign AM6SAT
uplink 145.925 MHz (no tone), downlink 436.888 MHz
EASAT-2 – FM voice repeater, callsign AM5SAT
uplink 145.875 MHz (no tone), downlink 436.666 MHz
Both satellites have also digitized FM voice beacons and FSK data repeaters.

These are the first satellites built by AMSAT-EA, with the project leaders being all Spanish radio amateurs and almost all the engineering made by radio amateurs with help of students of two universities. While AMSAT-EA doesn't have the flight heritage of other AMSAT organizations, this is an important step for the organization as it moves to improve skills in order to build better satellites for the radio amateur satellite service in the future.

More information and photos of these and other upcoming AMSAT-EA projects is available at https://bit.ly/3lNjTJq

[ANS thanks AMSAT-EA for the above information]

Arecibo Observatory Faces Demolition After Cable Failures

After withstanding hurricanes and earthquakes, playing central roles in movies like “GoldenEye” and “Contact,” Puerto Rico’s famed Arecibo Observatory, once the largest radio telescope in the world, will be demolished because of cable failures that left its huge detector platform too unstable to attempt repairs.

“After reviewing the engineering assessment, we have found no path forward that would allow us to do so safely,” said Sean Jones, assistant director for the Mathematical and Physical Sciences Directorate at the National Science Foundation.

“We know that a delay in decision making leaves the entire facility at risk of an uncontrolled collapse, unnecessarily jeopardizing people and also the additional facilities.”

Operated by the NSF through the University of Central Florida, the iconic observatory is made up of a fixed 1,000-foot-wide dish antenna built into a bowl-like depression that reflects radio waves or radar beams to a 900-ton instrument platform suspended 450 feet above by cables stretching from three support towers.

For 57 years, the observatory has played a leading role observing deep space targets, bodies in the solar system and, using powerful lasers, the composition and behavior of Earth's upper atmosphere.

But the beginning of the end came on Aug. 10 when an auxiliary cable installed in the 1990s pulled free of its socket on one support tower and crashed onto the dish below, ripping a 100-foot-long gash.

Engineers were developing repair plans when one of the main 3-inch-wide cables attached to the same tower unexpectedly snapped on Nov. 6, causing the instrument platform to tilt and putting additional stress on the remaining cables.

An analysis showed the cable failed in calm weather at about 60 percent of of its minimum breaking strength. Inspections of other cables showed fresh wire breaks and slippage in several auxiliary cable sockets that were added to the structure in the 1990s.

An engineering firm hired by the University of Central Florida to assess the structure concluded it would be unsafe to proceed with repairs. Even stress tests to determine the strength of the remaining cables could trigger a catastrophic collapse.

Instead, engineers recommended a controlled demolition, bringing down the suspended instrument platform in a way that will prevent damage to other structures at the periphery of the dish by making sure the towers themselves don't collapse and by ensuring no cables whip into those structures.

"The telescope is at serious risk of an unexpected, uncontrolled collapse," said Ralph Gaume, director of NSF's Division of Astronomical Sciences. "According to engineering assessment, even attempted stabilization, or testing the table could result in accelerating the catastrophic failure.

"Engineers cannot tell us the safety margin of the structure, but they have advised NSF that the structure will collapse in the near future on its own."

Plans for bringing down the instrument platform have not yet been finalized and it's not yet known whether explosives will be used in a controlled demolition or whether it might be possible to somehow lower the platform to the dish below.

However it plays out, the 1,000-foot-wide telescope will essentially be destroyed. While the laser facility and visitor's center will hopefully be preserved, the radio telescope itself will be no more.

[ANS thanks SpaceflightNow for the above information]

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https://www.zazzle.com/amsat_gear

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[ANS thanks Charlie Sufana, AJ9N, one of the ARISS operation team mentors for the above information]

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Satellite Shorts From All Over

+ Happy 7th birthday to AO-73, FUNcube-1, which was launched on November 21,2013. Congratulations to AMSAT-UK on the ongoing success of this project. (ANS thanks AMSAT-UK for the above information)

+ South Dublin Radio Club has uploaded its latest video to the club's YouTube channel. The video was created for Science Week in collaboration with Dublin Maker & Science Foundation Ireland and is called "Signals from Outerspace! Make your own antenna to get images from Weather Satellites." It is designed as a beginner's radio project and instructs viewers on how to construct a very simple V-dipole for 137 MHz, demonstrating how it can be utilised along with a basic SDR and computer in order to decode images from NOAA Weather satellites. It's available at https://www.youtube.com/watch?v=8doUGhNKzdY
(ANS thanks Southgate ARC for the above information)

+ Sean Kutzko, KX9X, is creating a series of YouTube videos for the DX Engineering channel beginning with "How and Why to Get Started in Operating Amateur Radio Satellites." Later episodes build on the concepts in the first. See the first episode at: https://www.youtube.com/watch?v=Vp7h4ikthDQ
(ANS thanks Sean Kutzko, KX9X, for the above information)

+ APSS-1, a 1U CubeSat mission with deployable solar panels, built by The University of Auckland (New Zealand), Faculty of Engineering, was launched on November 20. The satellite is intended for monitoring of ionosphere activity and transmission of processed data to ground stations using a 9k6 GMSK AX 25 downlink on 435.100 MHz. APSS-1 will start transmitting 45 minutes after deployment, and will only beacon every 5 minutes initially.
(ANS thanks Mark Jessop, VK5QI, for the above information)

+ The Rocket Lab flight that took APSS-1 to orbit (see immediately above) was notable because Rocket Lab says the first stage of its Electron launcher splashed down under parachute in the Pacific Ocean off New Zealand after firing into space with 30 small satellites, becoming only the second private company to return an orbital-class booster to Earth intact. The privately-developed Electron rocket has flown 16 times, including Thursday’s mission, but this was the first time an Electron rocket flew with parachutes to attempt a full series of descent maneuvers.
(ANS thanks SpaceflightNow for the above information)

+ NASA "Scan" on Facebook has published a note about ARISS and its 20 years. Look for their post dated on November 16 at: https://www.facebook.com/NASASCaN and add a comment to let them know that we amateur radio ops are here and that it was great they had dedicated a post to ARISS and to all hams!
(ANS thanks Fernando Casanova, EC1AME, for the above information)

+ Talks from the DEF CON event are available on YouTube, they include a number of amateur radio talks from the conference's Ham Radio Vil* lage. Among the amateur radio talks is "Talking to Satellites" by Eric Escobar, KJ6OHH. See the playlist at: https://bit.ly/3fpuwzO
(ANS thanks Southgate ARC for the above information)

+ Hawaii Space Flight Laboratory (HSFL) has updated TLEs for Neutron-1. HSFL appreciates the amateur community who have been listening for Neutron-1’s beacon, and wish to be notified of amateurs still listening for the beacon at n1-info(a)hsfl.hawaii.edu. The new TLEs and other

bulletins may be found at https://www.hsfl.hawaii.edu/
(ANS thanks HSFL and JoAnne Maenpaa, K9JKM, for the above information)

+ Open Research Institute has announced AmbaSat Inspired Sensors as a formal ORI project. To read the proposal document, visit: https://bit.ly/2KrpcQZ The first work session expected December 2020 to May 2021 centered at Villanova University. The Principal Investigator is Dr. Alan Johnston.
(ANS thanks Michelle Thompson, W5NYV, AMSAT Board Member, for the above information)

+ Dave Johnson, G4DPZ, gave an online satellite talk to the Mid Ulster Amateur Radio Club on Nov. 10. The video is now available for everyone to watch on YouTube. The talk covered the many amateur satellites in Low Earth Orbit that operate in the 145 MHz and 435 MHz satellite bands as well as the QO-100 geostationary satellite which uses the 2.4 GHz and 10 GHz bands. Also covered were the new Inter-Operable Radio System which has recently been installed in the ISS Columbus module and Gateway Amateur Radio Exploration (AREx). Watch it at: https://bit.ly/3pNKSXJ
(ANS thanks AMSAT-UK for the above information)

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In addition to regular membership, AMSAT offers membership in the President's Club. Members of the President's Club, as sustaining donors to AMSAT Project Funds, will be eligible to receive additional benefits. Application forms are available from the AMSAT Office.

Primary and secondary school students are eligible for membership at one-half the standard yearly rate. Post-secondary school students enrolled in at least half time status shall be eligible for the student rate for a maximum of 6 post-secondary years in this status. Contact Martha at the AMSAT Office for additional student membership information.

73 and Remember to help keep amateur radio in space,
This week's ANS Editor, Mark D. Johns, K0JM

k0jm at amsat dot org